ENVIRONMENTAL PRODUCT DECLARATION

iCLASS SE R40 READER

ASSA ABLOY / HID GLOBAL





HID Global is committed to providing products and services that are environmentally sound throughout the entire production process and the product lifecycle. Our unconditional aim is to make sustainability a central part of our business philosophy and culture, but even more important is the job of integrating sustainability into our business strategy. The employment of EPDs will help architects, consultants, designers, general contractors, and LEED practitioners select environmentally preferable security solutions. This EPD provides detailed requirements with which to evaluate the environmental impacts related to producing and using security solutions. HID Global will continue our efforts to protect the environment and will utilize the EPD as one means to document those efforts.





ENVIRONMENTAL PRODUCT DECLARATION



HID GlobalAccess control systems – iCLASS SE R40

According to EN 15804 and ISO 14025 Dual Recognition by UL Environment and Institut Bauen und Umwelt e.V.

This declaration is an environmental product declaration (EPD) in accordance with ISO 14025. EPDs rely on Life Cycle Assessment (LCA) to provide information on a number of environmental impacts of products over their life cycle. Exclusions: EPDs do not indicate that any environmental or social performance benchmarks are met, and there may be impacts that they do not encompass. LCAs do not typically address the site-specific environmental impacts of raw material extraction, nor are they meant to assess human health toxicity. EPDs can complement but cannot replace tools and certifications that are designed to address these impacts and/or set performance thresholds – e.g. Type 1 certifications, health assessments and declarations, environmental impact assessments, etc. Accuracy of Results: EPDs regularly rely on estimations of impacts, and the level of accuracy in estimation of effect differs for any particular product line and reported impact. Comparability: EPDs are not comparative assertions and are either not comparable or have limited comparability when they cover different life cycle stages, are based on different product category rules or are missing relevant environmental impacts. EPDs from different programs may not be comparable.



	-		
PROGRAM OPERATOR	UL Environment		
DECLARATION HOLDER	ASSA ABLOY / HID Global		
ULE DECLARATION NUMBER	4786980837.102.1		
IBU DECLARATION NUMBER	EPD-ASA-20150217-IBA1-EN		
DECLARED PRODUCT	iCLASS SE R40 Reader		
REFERENCE PCR	Electronic Access Control Systems, 11-2013, IBU		
DATE OF ISSUE	8/17/2015		
PERIOD OF VALIDITY	5 years		
SCOPE	This EPD is Manufacturer Declaration (1a) – Declaration of a specific product from a manufacturer's plant. The owner of the declaration shall be liable for the underlying information and evidence.		
	Product definition		
	Information about basic material and the material's origin		
CONTENTS OF THE	Description of the product's manufacture		
DECLARATION	Indication of product processing		
	Life cycle assessment results		
	Testing results and verifications		

The PCR review was conducted by:	
The CEN Norm EN 15804 serves as the core PCR. This declaration was independently verified in accordance with ISO 14025 by Underwriters Laboratories	uB
☐ INTERNAL ☐ EXTERNAL	WadeStout, UL Environment
This life cycle assessment was independently verified in accordance with ISO 14044 and the reference PCR by:	IBU – Institut Bauen und Umwelte e.V.





1. General Information

HID Global

Programme holder

IBU - Institut Bauen und Umwelt e.V. Panoramastr. 1 10178 Berlin Germany

Declaration number

EPD-ASA-20150217-IBA1-EN

This Declaration is based on the Product Category Rules:

Electronic Access Control Systems, 11-2013 (PCR tested and approved by the independent expert committee (SVR))

Issue date

17.08.2015

Valid to

16.08.2020

Wermanes

Prof. Dr.-Ing. Horst J. Bossenmayer (President of Institut Bauen und Umwelt e.V.)

Dr.-Ing. Burkhart Lenmanr (Managing Director IBU)

iCLASS SE R40

Owner of the Declaration

ASSA ABLOY (HID Global) 611 Center Ridge Drive Austin, TX 78753 USA

Declared product / Declared unit

This Declaration represents 1 card reader model iCLASS SE R40, with pigtail, including all custom configurations.

Scope:

The Life Cycle Assessment is based on data collected by the contract manufacturer of the R40 at their production facility located in Philippines.

The owner of the declaration shall be liable for the underlying information and evidence; the IBU shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

Verification

The CEN Standard EN 15804 serves as the core PCR

Independent verification of the declaration and data according to ISO 14025

internally

externally



2. Product

2.1 Product description

The iCLASS SE R40 reader, produced by HID Global, an ASSA ABLOY Group brand, is a device that communicates with a personalized credential via RF technology.

The reader collects identity information from the credential and passes it along to a secured control unit via electrical cable. The control unit then grants or denies access to the credential holder. The reader is capable of communications using a high frequency RF signal and able to communicate with several credential formats. Also factory settings can be updated to various configurations allowing the reader flexibility in its function.

Supported credential formats:

- iCLASS SE (Cards/Tags/Fobs)
- SE for DESFire EV1 (Cards)
- SE for MIFARE Classic (Cards/Tags/Fobs)

Configurable functions:

- LED function
- Audible signal (Beep)
- Communication format
- Optical Tamper

2.2 Application

The iCLASS SE R40 reader is suitable for indoor and outdoor use, where ID authentication is required. Common applications include: Commercial buildings, Industrial buildings, Government buildings, Military installations, Education establishments, Healthcare buildings.

2.3 Technical Data

The table presents the technical properties of iCLASS SE R40 reader:

Technical data

rechnical data		
Parameter	Value	Unit
Mounting	Wall Switch Size	ı
Power supply	5-16VDC	V
Current Requirements	95mA	Α
Operating Temperature	-35 to 65	ů
Operating Humidity	5% to 95%	%
Transmit Frequency	13.56MHz	kHz
Power Input "Standby"	1.04	W
Power Input "Operation"	1.52	W



2.4 Placing on the market / Application rules

Compliance with US, Canada, and CB Scheme Safetv:

- UL294-The Standard of Safety for Access Control System Units
- C22.2 No. 205 Signal Equipment
- CB Certificate US-21166-UL

Compliance with US and Canada Unlicensed Radios:

- US FCC Radio Certification 47 CFR Part 15, Subpart C
- Canada Radio Certification RSS-210 Issue 8: 2010

Compliance with the European Union R&TTE Directive:

The products are subject to CE marking according to the relevant harmonization legislation. Affixing the CE marking to the products means the compliance of the product with the a. m. Directive.

The following standards apply:

- EN 60950-1: 2006/ All: 2009 +A1:2010 +A12:2011 Information technology equipment Safety Part1: General requirements
- EN 301 489-1 V1.9.2 Common Technical Requirements
- EN 301 489-3 V1.6.1 Specific conditions for Short-Range Devices (SRD) operating on frequencies between 9 kHz and 40 GHz
- EN 50130-4:2011 Alarm systems Electromagnetic Compatibility and Environmental test methods
- ETSI EN 300 330-2 V1.5.1 Electromagnetic Compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio equipment in the frequency range 9 kHz to 25 MHz and inductive loop systems in the frequency range 9 kHz to 30 MHz; Part 2: Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive

Compliance with the RoHS2 Directive

The products are subject to CE marking according to the relevant harmonization legislation. Affixing the CE marking to the products means the compliance of the product with the a. m. Directive.

The following standard applies:

EN 50581:2012 – RoHS2 Conformity

2.5 Delivery status

Each reader unit is delivered individually packaged with mounting plate, and mounting hardware. Packaged reader dimensions: 3.3" x 4.8" x 1.0" (8.4cm x 12.2cm x 2.4cm).

2.6 Base materials / Ancillary materials

The average composition of iCLASS SE R40 reader is as follows:

Component	Percentage in mass (%)
Plastics	62.6
Stainless Steel	3.2
Glass	9.5
Electronics (signal-power)	24.7
Total	100.0

2.7 Manufacture

The iCLASS SE R40 is assembled at a contract manufacturer's production facility in the Philippines. The injection molded parts are purchased from an external supplier. The electronic components, including PCB, are purchased externally and assembled at the contract manufacturer's production facility. During assembly the individual parts are assembled into the reader bezel and then potted into place. The assembled reader is then packaged with the mounting plate and hardware for shipment.

2.8 Environment and health during manufacturing

The Management System of the contract manufacturer has been assessed and certified as meeting the requirements of ISO 14001:2004 standard. In addition, industrial safety is certified as compliant to OHSAS 18001 standard.

2.9 Product processing/Installation

iCLASS SE R40 readers are installed by trained product integrators or by the product end user. Installation instructions are included with each reader unit.

2.10 Packaging

The reader is packed in a cardboard box. Also included in the packaging are paper installation instructions, and a plastic bag containing the connectors and mounting hardware. Packaging materials shall be collected separately for recycling.

Material	Value (%)
Cardboard/ Paper	98.02
Plastics	1.98
Total	100.0

2.11 Condition of use

No auxiliary or consumable materials are incurred for maintenance and usage of the reader. Repairs or replacement are not usually necessary. No cleaning efforts need to be taken into consideration.

2.12 Environment and health during use

There are no interactions between products, the environment and health.

2.13 Reference service life

The service life of the iCLASS SE R40 reader is estimated to be 30 years. This number is based on the most conservative Mean Time Between Failure (MTBF) data available for the reader components at elevated operation temperatures. MTBF of 270110 hours at 65°C.

2.14 Extraordinary effects

Fire

The external housing of the R40, consisting of the bezel and mounting plate, are constructed from polycarbonate resin thermoplastic. The housing material, and thus the reader as a whole unit, has been classified as having a UL94 HB Flame Rating. A UL94 Flame Rating of HB indicates: slow burning on a horizontal specimen; burning rate < 76 mm/min for thickness < 3 mm and burning stops before 100 mm.

Water



No substances are used on the device, which could have a negative impact on ecological water quality on contact with water.

Mechanical destruction

No danger to the environment can be anticipated during mechanical destruction.

2.15 Re-use stage

The following possibilities arise with reference to the material composition of the reader.

Re-use

During the reference service life, the reader can be disconnected and dismounted then remounted and attached elsewhere.

Material Recycling

The card reader can be recycled according to local electronics recycling options offered by municipalities, electronics recyclers or garbage haulers.

2.16 Disposal

Packaging components incurred during installation are directed to local paper and cardboard recyclers.

The product can be mechanically dissembled to separate different materials. For this, collection rate of 5% was assumed. The rest is disposed as a construction waste for landfill.

2.17 Further information

More information on ASSA ABLOY (HID Global) and iCLASS SE readers is available by:

ASSA ABLOY (HID Global) 611 Center Ridge Drive Austin, TX 78753 USA

Internet: www.hidglobal.com

Tel: 512-776-9000

3. LCA: Calculation rules

3.1 Declared Unit

The declaration refers to the functional unit of 1 piece of iCLASS SE R40 reader as specified in Part B requirements on the EPD for Electronic Access Control Systems /IBU PCR Part B/.

Declared unit

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Name	Value	Unit			
Declared unit	1	piece of iCLASS SE R40			
Mass (without packaging)	0.26	kg			
Conversion factor to 1 kg	3.781	-			

3.2 System boundary

Type of the EPD: cradle to gate - with options. The following life cycle stages were considered: Production stage:

- A1 Raw material extraction and processing
- A2 Transport to the manufacturer and
- A3 Manufacturing.

Construction stage:

- A4 Transport from the gate to the site
- A5 Packaging waste processing

Use stage related to the operation of the building includes:

• B6 – Operational energy use (Energy consumption for lock operation)

End-of-life stage:

- C2 Transport to waste processing,
- C3 Waste processing for recycling and
- C4 Disposal (landfill).

These information modules include provision and transport of all materials, products, as well as energy and water provisions, waste processing up to the end-of-waste state or disposal of final residues.

Module D:

 Declaration of all benefits or recycling potential from EoL and A5

3.3 Estimates and assumptions

Use stage:

For the use stage, it is assumed that the iCLASS SE R40 reader is used in the United States of America, thus an US electricity grid mix is considered within this stage.

EoL:

In the End-of-Life stage of the product, a recycling scenario with a 5% collection rate was assumed. For packaging material, a 100% collection rate was assumed.

3.4 Cut-off criteria

In the assessment, all available data from the production process are considered, i.e. all raw materials used, auxiliary materials (e.g. lubricants), thermal energy consumption and electric power consumption - including material and energy flows contributing less than 1% of mass or energy (if available). In case a specific flow contributing less than 1% in mass or energy is not available, worst case assumption proxies are selected to represent the respective environmental impacts.

Impacts relating to the production of machines and facilities required during production are out of the scope of this assessment.

3.5 Background data

For life cycle modeling of the considered products, the GaBi 6 Software System for Life Cycle Engineering, developed by thinkstep AG, is used /GaBi 6 2013/. The GaBi-database contains consistent and documented datasets which are documented in the online GaBi-documentation /GaBi 6 2013D/. To ensure comparability of results in the LCA, the basic data of GaBi database were used for energy, transportation and auxiliary materials.



3.6 Data quality

The requirements for data quality and background data correspond to the specifications of the /IBU PCR PART A/.

thinkstep AG performed a variety of tests and validations during the commission of the present study in order to ensure its quality of the present document and results. This obviously includes an extensive review of project-specific LCA models as well as the background data used.

The technological background of the collected data reflects the physical reality of the declared products. The datasets are complete and conform to the system boundaries and the criteria for the exclusion of inputs and outputs.

All relevant background datasets are taken from the GaBi 6 software database. The last revision of the used background data has taken place not longer than 10 years ago.

3.7 Period under review

The period under review is 2013/14 (12 month average).

3.8 Allocation

Regarding incineration, the software model for the waste incineration plant (WIP) is adapted according to the material composition and heating value of the combusted material. Following specific life cycle inventories for the WIP are considered:

- Waste incineration of plastic
- Waste incineration of paper
- Waste incineration of electronic scrap

Regarding the recycling material of metals, the metal parts in the EoL are declared as end-of-waste status. Thus, these materials are considered in module D. Specific information on allocation within the background data is given in the GaBi dataset documentation.

3.9 Comparability

Basically, a comparison or an evaluation of EPD data is only possible if all the data sets to be compared were created according to /EN 15804/ and the building context, respectively the product-specific characteristics of performance, are taken into account.

4. LCA: Scenarios and additional technical information

Installation into the building (A5)

Name	Value	Unit
Output substances following waste treatment on site (Paper packaging)	0.0643	kg
Output substances following waste treatment on site (Plastic packaging)	0.0013	kg

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Name	Value	Unit
Reference service life	30	а

Operational energy use (B6)

Name	Value	Unit
Electricity consumption	261.93	kWh
Days per year in use	365	Days
Hours per day in mode	1	h
Hours per day in different modes	23	h
Power consumtion on mode	1.52	W
Power consumption stand-by mode	1.04	W

End of life (C2-C4)

Name	Value	Unit		
Collected separately plastics, stainless steel, electronics	0.0120	kg		
Collected as mixed construction waste construction waste for landfilling	0.2525	kg		
Reuse plastic parts	0.0083	kg		
Recycling stainless steel, electronics	0.0037	kg		
Landfilling - Construction waste for landfill	0.2525	kg		

Reuse, recovery and/or recycling potentials (D), relevant scenario information

Name	Value	Unit
Collected separately waste Card reader (including packaging)	0.3301	kg
Recycling stainless steel	0.13	%
Recycling electronics	0.99	%

Thermal treatment (plastics)	2.51	%
Loss Construction waste for landfilling (no recycling potential)	76.50	%
Reuse packaging (paper)	19.48	%
Reuse packaging (plastics)	0.39	%



5. LCA: Results

Results shown below were calculated using CML 2000 – Apr. 2013 Methodology.

DESC	RIP	TION O	F THE	SYST	ЕМ ВО	DUND	ARY (X =	INCLU	DED II	A; MN	MND = MODULE NOT DECLARED)						
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RESU	LTS	OF TH	E LC	۱ - EN	/IRON	MENT	AL IM	IPA	CT: On	e piec	of	iCLAS	S S	E R40	reade			
Parame	rameter Parameter			r	U	nit	A1 - A	A3	A4	A5		B6		C2	C3	C	:4	D
GWF	>	Global warming potential			[kg C0	D ₂ -Eq.]	7.08E-	+00	9.37E-02	9.11E-	02 1	.87E+02	2 7.8	5E-04	4.94E-03	4.34	E-01	-1.58E+00
ODP	,	Depletion			[kg CFC	C11-Eq.]	2.14E	-09	3.75E-13	4.17E-	13 6	6.47E-08	3.7	6E-15	3.38E-12	1.30	E-12	-1.24E-10
AP	- /	stratospheric ozone layer Acidification potential of land and water			[kg S0	D ₂ -Eq.]	4.40E	-02	1.93E-03	2.08E-	05 6	6.32E-01	3.5	9E-06	2.33E-05	1.16	E-04	-1.61E-02
EP		Eutrophication potential			[kg (PO ₄) ³ - Eq.]		3.59E	-03	2.15E-04	3.62E-	06 3	3.38E-02	8.2	0E-07	1.31E-06	1.01	E-05	-9.43E-04
POCE	Р	Formation potential of tropospheric ozone photochemical oxidants			[kg Ethen Eq.]		3.04E-03		5.25E-05	1.47E-	E-06 3.87E)2 -1.16E-06		1.38E-06	5.91E-06		-8.50E-04
ADPE	E	Abiotic depletion potential for non fossil resources		[kg Sb Eq.]		7.09E-04		2.83E-09	1.64E-	09 2	2.47E-05	2.9	6E-11	6.84E-10	3.28	E-08	-1.04E-03	
ADPF	F	Abiotic depletion potential for fossil resources		[MJ]		9.25E+01		1.20E+00	2.55E-	.55E-02 2.16I		+03 1.08E-02		5.61E-02	1.93	E-01	-1.74E+01	
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Parame PERI PERI PENR PENR PENR SM RSF NRSI FW RESU Parame HWII NHW RWII CRL	E MM TT TRRE RRM RRT TRIBLES FE TE CONTROL TO THE C	Renew Rene resource Total us Non rene n Total use Use of re Use of n Hazardo Non h Radioact Compo	Pararra able prirenergy wable poses as masses of renergy reserved for non renergy reserved for non renergy reserved for non renergy reserved for non renewable on renewable on renewable for non renewable on renewable for non renewable on renewable for non renewable	mary ene carrier rimary er example pesources rimary er carrier rimary er carrier rimary er extension enewable pesources dary mate a seconda wable seeds fresh water e dispose us waste ed te dispose or re-use	ergy as hergy lization orimary hergy as hergy as hergy as hergy as hergy as hergy as hergy are primary fuels condary ter hergy as hergy fuels condary fuels fuel fuels fue	Un [M.	it A J] 7.5 J] 0.0 J] 7.5 J] 1.0 J] 1.0 J] 1.0 J] 0.0 J] 4.7 A1 - A3 5.06E-0 4.46E-0 0.00E+0	11 - A 51E+ 51E+ 51E+ 51E+ 51E+ 51E+ 51E+ 51E+	3 A4 00 - 00 - 00 2.06E 00 - 00 1.21E 00 0.00E 00 0.00E 00 0.00E VASTE A4 1.92E-06 6.43E-05 1.52E-06	-02 2.34 +00 2.99 +00 0.00 +00 0.00 -05 2.69 2.06E-0 2.29E-0 1.75E-0 0.00E+0	A5	2.11E+ - 2.73E+ 0.00E+ 0.00E+ 9.61E- IES: C B6 .13E-03 .72E-01 .25E-01 00E+00	002 4 003 1 000 0 000 0 000 0 000 0 000 1 2.44 1.3 1.44 0.00		1.61E-0 1.61E-0 1.61E-0 1.61E-0 1.000E+0 1.000E+0 1.22E-05 1.27E-05 1.27E-05 0.00E+00	02 2.15 00 0.00 00 0.00 00 0.00 00 1.66 6.12 8.90 0 0.00	- DE-02	
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6. LCA: Interpretation

This chapter contains an interpretation of the Life Cycle Impact Assessment categories. Stated percentages in the whole interpretation are related to the overall life cycle, excluding credits (module D).

The production stage (modules A1-A3) contributes between 3% and 9% to the overall results for all the environmental impact assessment categories hereby considered, except for the abiotic depletion potential (ADPE), for which the contribution from the production stage accounts for app. 97% - this impact category describes the reduction of the global amount of non-renewable raw materials, therefore, as expected, it is mainly related with the extraction of raw materials (A1).

Within the production stage, the main contribution for all the impact categories is the production of electronics mainly due to the energy consumption on these processes. Plastics account with almost 63% to

the overall mass of the product, therefore, the impacts are not in line with the mass composition of the product. The environmental impacts for the transport (A2) have a negligible impact within this stage.

To reflect the use stage (module B6), the energy consumption was included and it has a major contribution for all the impact assessment categories considered - between 90% and 97%, with the exception of ADPE (3%). This is a result of 23 hours of operation in stand-by mode and 1 hour in on mode per day and per 365 days in a year.

In the end-of-life stage, there are loads and benefits (module D, negative values) considered. The benefits are considered beyond the system boundaries and are declared for the recycling potential of the metals and for the credits from the incineration process (energy substitution).

7. Requisite evidence

Not applicable in this EPD.

8. References

Institut Bauen und Umwelt

Institut Bauen und Umwelt e.V., Berlin (pub.): Generation of Environmental Product Declarations (EPDs);

General principles

for the EPD range of Institut Bauen und Umwelt e.V. (IBU), 2013-04 www.bau-umwelt.de

IBU PCR Part A

IBU PCR Part A: Institut Bauen und Umwelt e.V., Berlin (pub.): Product Category Rules for Construction Products from the range of Environmental Product Declarations of Institut Bauen und Umwelt (IBU), Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Background Report. April 2013

www.bau-umwelt.de

IBU PCR Part B

IBU PCR Part B: PCR Guidance-Texts for Building-Related Products and Services. From the range of Environmental Product Declarations of Institute Construction and Environment e.V. (IBU). Part B: Requirements on the EPD for Electronic Access Control Systems. www.bau-umwelt.com

GaBi 6 2013

GaBi 6 2013: Software-System and Database for Life Cycle Engineering. Copyright, TM. Stuttgart, thinkstep AG, Leinfelden- Echterdingen, 1992-2013.

GaBi 6 2013D

GaBi 6 2013D: Documentation of GaBi 6: Software-System and Database for Life Cycle Engineering. Copyright, TM. Stuttgart, thinkstep AG, Leinfelden-Echterdingen, 1992-2013. http://documentation.gabi-software.com

ISO 14001

ISO 14001:2009-11: Environmental management systems - Requirements with guidance for use

ISO 14025

ISO 14025:2011-10: Environmental labels and declarations — Type III environmental declarations — Principles and procedures

ISO 9001

ISO 9001:2008: Quality management systems - Requirements

EN 15804

EN 15804:2012+A1:2014: Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products

RoHS Conformity:

RoHS Conformity: EN50581:2012 Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

UL294/cUL

The Standard of Safety for Access Control System Units

UL94

Flame Rating of HB

EN60950

EN60950-1: 2006/ All: 2009 +A1:2010 +A12:2011 Information technology equipment - Safety - Part1: General requirements

EN 301 489

EN 301 489-1 V1.9.2 : Common Technical requirements



EN 301 489-3 V1.6.1: Specific conditions for Short-Range Devices (SRD) operating on frequencies between 9 kHz and 40 GHz

EN50130

EN50130-4:2011 : Alarm systems - Electromagnetic compatibility and Environmental test methods

ETSI EN 300

ETSI EN 300 330-2 V1.5.1 Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio equipment in the frequency range 9 kHz to 25 MHz and inductive loop systems in the frequency range 9 kHz to 30 MHz; Part 2: Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive

ETSI EN 302

ETSI EN 302 291-2 V1.1.1 : Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Close Range Inductive Data Communication equipment operating at 13,56 MHz; Part 2: Harmonized EN under article 3.2 of the R&TTE Directive

EN 50581

EN 50581: 2012 Guiding Standard for Compliance with RoHS2 Technical Documentation Requirements FCC Certification: 47 CFR §15.225: 2011 Operation within the band 13.110-14.010 MHz

RSS-210

RSS-210 Issue 8: 2010 License-exempt Radio Apparatus (All Frequency Bands): Category I Equipment - Spectrum Management and Telecommunications Radio Standards Specification



9. Annex

Results shown below were calculated using TRACI Methodology.

DESC	CRIP	TION C	F THE	SYST	EM B	DUND	ARY (X =	INCL	UDE	D IN	LCA;	MND	= MOD	ULE N	OT [DECLA	RED)	
CONSTRUCTI														FITS AND					
PROI				CESS			US	SE ST	TAGE	END OF L	IFE STA		LOADS BEYOND THE						
	STAGE					302 377.02									2.12 3. 2.12 01/102				
			۵											ВОО	NDARYS				
			the ite			Φ		Ę	را ا را		Operational energy use	Operational water use	on		Waste processing				
teriä Iy	oort	urin rom e si		bly	ano		·≒	nen	Replacement ¹⁷ Refurbishment ¹⁾		e	<u>₹</u>	ncti	ğ Z	Ses	sal	ь	ing- tial	
ma	Raw material supply Transport		anufacturi sport from te to the s Assembly		Use	iten	Repair	Replacement ¹⁾		usic	onal use	iona use	De-construction	Transport	pro	Disposal	Reuse-	Recycling- potential	
saw	Tra	Manufacturing Transport from the gate to the site Assembly			Use Maintenance		elde	. 3	יון מוני פון מוני	ratic	erat	0 2		ste	ä	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	Rec Po		
œ		Σ	ga N			×		בר בלין) Dbe	o	De		Wa						
A1	A2	A3	A4	A5	B1	B2	В3	B4	ı E	35	B6	B7	C1	C2	C3	C4		D	
Х	Χ	Х	Х	Х	MND	MND	MND	MN	D M	ND	Х	MND	MNI) X	Х	Х		Х	
RESU	JLTS	OF TH	IE LCA	- ENV	IRON	MENT	AL IM	PAC	CT: O	ne p	iece	of iCL	ASS	SE R4) reade	er			
Param				,	Jnit	A1 - A	А3	A4		A5		36	C2	СЗ		C4	D		
GW	P	Global v	varming p	otential	[kg C	[kg CO ₂ -Eq.]		+00	9.37E-02		9.11E-0	2 1.87	E+02	7.85E-04	4.94E-0	03 4.3	34E-01	-1.58E+00	
ODI	P	•	n potentia		ſka CF	[kg CFC11-Eq.		-09	3.99E-	-13 4	1.43E-1	3 6.89	E-08	4.00E-15	3.60E-	12 1.3	39E-12	-1.66E-10	
		stratospheric ozone layer Acidification potential of land			+														
AP		and water				[kg SO ₂ -Eq.]			2.07E-		2.52E-0			4.69E-06	2.20E-0			-1.54E-02	
EP		Eutrophication potential Ground-level smog formation			[kg N-eq.]		5.15E	-03	7.61E	-05 1	1.45E-0	6 2.90	E-02	3.32E-07	9.39E-0	07 4.7	78E-06	-4.10E-04	
Smo	og	potential			[kg O₃-eq.]		5.77E	-01	3.84E	-02 5	5.87E-0	4 5.03	E+00	9.66E-05	2.00E-0	04 1.3	34E-03	-1.74E-01	
Resou	rces I	s Resources – fossil resources			[MJ]	8.05E	8.05E+00		.73E-01 2.9		3 1.27	E+02	1.56E-03	3.99E-0	03 1.98E-02		-1.01E+00	
RESU	JLTS	OF TH	IE LCA	- RES	OUR	CE US	E: One pi		ece of iC		LASS SE R		40 re	ader					
Parameter				Unit	A1	A1 - A3		4	A5		B6	C2	C3		C4	D			
PE	Renewable primary ene energy carrier		rgy as	gy as [MJ]		E+00	-		-		-	-	-		-	-			
PEI	RM	Renewable primary ener				[MJ]	0.00	0.00E+00			-		-	-	-		-	-	
PE	resources as material util Total use of renewable p						7.51E+0(F-02	2 2.38E-03 2		1F+02	4 27F-04	4 1.61E-02		50E-02	-8.87E-01		
			energy re ewable p	esources rimary en	nergy as	nv as		1.04E+02							1				
PEN	NKE	NI	energy			[MJ]	1.04	E+02	-		 		-	-			-	-	
PEN	IRM		-	rimary en utilization		[MJ]	0.00E+00		0 -		-		-	-	-		-	-	
PEN	NRT	Total use of non renewa			I [MJ]		1.04	1.04E+02		E+00	2.99E-02		3E+03	1.09E-02	-02 8.79E-02		15E-01	-1.87E+01	
SI	М	Use of secondary mate					2.87E-0		2 0.00E+00		0.00E+	0.0	0E+00	0.00E+0	0.00E+	-00 0.0	00E+00	0.00E+00	
RS	SF	Use of renewable secon fuels			ndary [MJ]		0.00E+0		0.00E+00		0.00E+	0.0	0E+00	0.00E+0	0.00E+	-00 0.0	00E+00	0.00E+00	
NR	SF	Use of non renewable sec fuels			condary	ondary [MJ]		E+00	0.00E+00		0.00E+	0.0	0E+00	0.00E+0	0.00E+	-00 0.0	00E+00	0.00E+00	
F۱	N	Use of net fresh water			er [m³]		4.76	E-02	2 1.79E-05		2.65E-	04 9.6	1E-01	3.01E-07	3.97E-	05 1.	09E-03	-1.21E-02	
		OF TH	IE LCA	/ – OU	TPUT	FLOV	/S ANI) W	AST	E CA	TEG	ORIES	S: On	e piece	of iCL	.ASS	SE R	10	
Param		Parameter					Unit	Δ1	I - A3	A4	1	A5	В6	C2		:3	C4	D	
HW																			
NHV		Hazardous waste disposed					[kg] [kg]	_			E-06 2.06E-06			_					
		Non hazardous waste disposed									3E-05 2.29E-0 2E-06 1.75E-0					-			
RW	· D	Radioactive waste disposed Components for re-use					r 31				E+00 0.00E+0			-					
RW CR			Compon				[kg]	0.0	0E+00	0.00E	+00 0.0	0E+00	0.00E+	-00 0.00E	+00 0.001	E+00 0	.00E+00	-	
	U				e-use		[kg]	_						-00 0.00E					
CR	U R		Material	ents for r	e-use cling			0.0	0E+00	0.00E	+00 6.4	10E-02	0.00E+		+00 3.38	E-02 0	0.00E+00	-	
CR MF	R R	Ма	Materials terials fo	ents for recy	e-use rcling recover		[kg]	0.00	0E+00 0E+00	0.00E	+00 6.4	10E-02 10E+00	0.00E+	-00 0.00E	+00 3.38 +00 0.00l	E-02 0	0.00E+00	-	





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